

AMENTIA IN THE EAST AFRICAN*

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THE inquiry I have the privilege of reporting aimed at estimating how far amentia in East African natives might be a factor to be reckoned with in the problem of "backwardness."† It was soon found to involve the task of obtaining some knowledge of the normal mind and brain of the native, and from this part of the inquiry emerged the few results I desire to bring before you.

Many of the obstacles to the ascertainment of amentia in Kenya are due to the youth of the colony. For example, we have no registration of native births and deaths; family, personal and medical histories, as well as actual ages, are almost never obtainable; and science has not yet given us any anthropological or anthropometric East African standards. You may nevertheless envy our scientific liberty in having no legal and educational definitions of amentia to contend with.

The problem of native amentia forced itself upon me early in the process of my own self-adjustment to the native environment in Kenya.‡ An adult houseboy, despite instructions, placed my hot bottle, night after night, not in my bed but on the floor under it. Exasperation dissolved in the question: When is a native an ament? Four years followed of fruitless effort to solve the question as one had learned to solve the corresponding question in England. In that period I made bold to draw public attention in Kenya to the social need for scientific research into native "mentality"; and I wish to

express gratitude for the support this proposal received from all schools of thought in the colony, from the Press, and in particular from our Governor, Sir Edward Grigg. Encouragement came, too, from Sir Herbert Bond, who affirmed the advantage to be gained for all humanity from organised research—carried out before the entry of civilization complicated the situation—into the normal and abnormal brain and mind of a simple race. Finally, in 1928, Professor Berry republished his biologically based method for the diagnosis of amentia in the European, and this seemed suitable for application under the conditions encountered in East Africa.*

The first step, made possible by official courtesy, was the examination of 219 male juveniles in the Nairobi Reformatory.† The offences of these inmates included theft, burglary, sex offences, manslaughter, and murder. Berry's method was used with necessary variation in the mental tests employed. The results of this method, taken as a whole, are held to be indicative of the state of development of the cerebrum, and are compared with percentile tables showing the approximate normal and abnormal for the individual's age and sex in the attributes examined. The percentile system happily requires no explanation here, for we owe it to the great founder of this *Society*, Sir Francis Galton.

The Reformatory survey found 86 per cent. of those examined to be aments. The 14 per cent. of normals could not be fitted into European ideas of normality without creation of two low classes—a low-grade normal and, lower still, a border-line normal. It was clear that a considerable proportion of this alarming result came from the use of European standards on another race. East African

* A paper read before the *Eugenics Society* on November 7th, 1933.

† I use the word "amentia" to mean mental deficiency and the word "ament" to mean a mentally deficient person, whether idiot, imbecile, or feeble-minded. Amentia has hitherto not been looked for in East Africa, and concerning the normal mind of the East African native we are no less ignorant; uncertainty and controversy on these subjects darken understanding and hinder native progress.

‡ H. L. Gordon: Note on diagnosis of Amentia in Africans. *East African Medical Journal*, November 1930.

* R. J. A. Berry: *Brain and Mind*. 1928.

† H. L. Gordon: *A Survey of the inmates of Kabete Reformatory*. 1930.

standards for the diagnosis of East African amentia were necessary. The survey suggested also that the secret of some racial differences between European and East African might, indeed, be largely in the grey matter or cortex of the East African brain.

The next step was therefore twofold: (1) To seek opportunity for the task of establishing East African percentile standards. (2) To seek expert co-operation for inquiry into the quantitative and qualitative values of the East African brain by the methods initiated by Mott, Watson, Shaw Bolton, Von Economo, and other distinguished pioneers. For the inquiry on the living I had the assistance of a capable youth of mixed blood from the Coast. The brain inquiry was carried out by my able colleague Dr. F. W. Vint, pathologist to the Kenya Government. We arranged together beforehand the lines for Dr. Vint's research; otherwise our parallel inquiries were carried out independently until each of us had reached and prepared his results.* We desire to emphasize at once that in our opinion we have only touched the fringe of a big unknown territory.

For the inquiry on the living an unselected series of males of all available ages was examined at the Native Labour Registration Office, Nairobi, by leave of the Chief Native Commissioner. It was estimated that about half of these were "raw" natives, the other half having some education or previous contact with civilization. The term "educated" cannot yet be applied to an East African in more than a spirit of encouragement. We had only one objector. An "educated" Kikuyu protested that the examination must be a preliminary to a new kind of taxation.

The immediate object was to obtain data for tables of percentiles in all the attributes examined by Berry's method, namely cubic capacity of brain estimated by head measurements; bodily weight, and standing and sitting height; right and left grips; and vital capacity. The question of mental tests will be referred to later.

The first 200 natives were used to train my

assistant. When the total number placed on record had reached 3,444, unforeseen personal circumstances made this the final number of the series. Actual ages being rarely obtainable, each individual was given his estimated year and the results were grouped. The few under 9 were not included. All those of 20 and over were classed as adults. In our judgment, and great care was exercised in this age estimation, very few were over the age of 30.

Fig. 1. RACE DISTRIBUTION

Age Group	9-10-11	12-13	14-15	16-17	18-19	Adult	Total
Bantu	97	195	291	632	657	1119	2991
Nilote	7	18	50	109	81	156	421
½ Hamite	0	1	2	0	7	6	16
Hamite	0	0	0	0	1	5	6
Mixed	0	0	1	0	5	4	10
	104	214	344	741	751	1290	3444

This table follows the racial classification of Professor Seligman.* We have some forty tribes, but none are true Negroes. Each of these racial classes of the tribes shows more or less mixture with what is said to be blood of the remote Hamites who invaded East Africa from the north and were an early offshoot of the Caucasoid stem. It should be observed that the Eastern Bantu were predominant in the series; 2,049 of the 2,991 were of the Kikuyu tribe, whose beautiful reserve is in the highlands near Nairobi. Of the Nilotes, 400 were Jaluo from the neighbourhood of Lake Victoria, twenty-one were Sudanese foreigners. Only two of the Half-Hamites were from the leading tribe, the Masai. The few Hamites were Nubians, also foreigners. The Mixed were from the Coast near Mombasa, telling the tale of different foreign invasions by sea. Local opinion credits all the four latter classes of the table with physical and mental superiority over our Eastern Bantu.

The smallness of the numbers for all except the Bantu made separate racial computations and comparisons unprofitable. Consequently the percentile tables obtained from the 3,444

* Dr. Vint's preliminary report was published in the *East African Medical Journal* for May 1932.

* C. G. Seligman: *Races of Africa*. 1930.

of all these races for all the attributes already named were adopted as provisional standards for general use pending a more comprehensive inquiry.*

Fig. 2. PERCENTILES OF BRAIN CAPACITY
3,444 MALES OF ALL RACES
(Unselected series)

Group Age Percentile	Years 9-10-11 c.c.	Years 12-13 c.c.	Years 14-15 c.c.	Years 16-17 c.c.	Years 18-19 c.c.	Adult c.c.
0	1,087	1,053	1,115	1,089	1,101	1,064
10	1,154	1,170	1,189	1,203	1,212	1,219
20	1,167	1,193	1,214	1,227	1,241	1,250
30	1,187	1,212	1,233	1,250	1,261	1,274
40	1,122	1,236	1,251	1,267	1,280	1,297
50	1,222	1,249	1,265	1,286	1,298	1,316
60	1,236	1,266	1,279	1,303	1,317	1,334
70	1,255	1,283	1,300	1,323	1,335	1,356
80	1,271	1,298	1,319	1,348	1,363	1,381
90	1,311	1,313	1,353	1,388	1,398	1,419
100	1,365	1,444	1,462	1,513	1,591	1,670

This table is the one for cubic capacity of brain. It shows the range of cubic capacity for each age-group. Taking the adult group, the lowest capacity in our series of 1,290 adults was 1,064 cubic centimetres, the highest 1,670. The 50 percentile represents the mean cubic capacity for each age-group; and the gradual rise of the mean from the lowest to the highest age-group helps to lessen doubt present in all African inquiries in which age estimation is a factor. The same gradual rise is seen in the tables for all the other attributes examined. A further point here is that Professor Berry overcomes the difficulty—met in statistical as in other sciences†—of differentiating the normal from the abnormal with precision enough for practical guidance, by using the standard deviation as approximate guide. By this means he found the range of normality to be from about the 20 to about the 80 percentile. Any individual with a cubic capacity about or below the 20, or about or above the 80 percentile, may be suspected as potentially abnormal. Using

* It is not possible to show all the results in one short paper, but all the percentile tables and many more of the results will, it is hoped, be published later.

† Mumford and Young: "Physical Measurements and Vital Capacity." *Biometrika*, Vol. XV.

the standard deviation in the same way as Professor Berry, I obtained from the tables the same result for the East African. Observe further that the mean or average brain capacity of the 1,290 East African male adults was 1,316 cubic centimetres, or 165 cubic centimetres less than the capacity given by authority for the European. I may say that Dr. Vint has found the average weight of 389 adult male East African brains to be 1,276 grammes, or 152 grammes less than the weight given by authority for the European.

Fig. 3. AVERAGE BRAIN CAPACITY OF ADULTS

Race	Number	Average in c.c.
Bantu :		
Kikuyu	... 740	1,119 } 1,313 } 1,312
Others	... 379	
Nilote :		
Jaluo	... 142	156 } 1,335 } 1,345
Sudanese	... 14	
‡ Hamite	...	6 } 1,312 } 1,316
Hamite	...	5 } 1,415
Mixed	...	4 } 1,376

Average brain capacity of adult Europeans (Berry) 1,481

Here, for what they are worth, are the racial differences in brain capacity amongst the same 1,290 adults. The average separately obtained for the Bantu is just 4 cubic centimetres less than the average of 1,316 cubic centimetres obtained for all races, not a significant difference by any means. Such figures, of course, are not advanced as accurate predictions, for reasons well known to you. Berry's method, as used by the inquiry, employs Lee's formula for the calculation of brain capacity from the head measurements. This formula deducts 11 millimetres from each measurement to allow for the thickness of the scalp and skull. Vint and I have found by *post-mortem* observations that 11 millimetres is too small a deduction in the East African, not because the East African skull is thicker than the European—as popularly believed—but because there seems to be greater thickness of the soft tissues. Here again, then, the method used by the inquiry over-estimates rather than under-estimates

the actual brain capacity in the average Kenya native.

Fig. 4. AVERAGE WEIGHT OF THE NATIVE BRAIN IN AGE GROUPS

(Post-mortem Records)

Age Group	No. of Cases	Average Weight
9-15	29	1,301 grams.
16-20	74	1,279 "
21-25	87	1,270 "
26-30	69	1,264 "
31-35	24	1,262 "
36-40	13	1,256 "
41 . . .	28	1,230 "

It is common belief that the native begins to decay early and ends in the years called in ourselves middle age. I have examined some thousands with this in mind and have had reason to think the belief well founded. In my experience the lean pantaloons is rare, second childishness does not exist. Dr. Vint and I have learnt to expect senility any year after 35, and in 2,000 *post-mortem* examinations have never estimated an age as over 60. This table seems to support the belief in early decay. It suggests that the native brain weight reaches its maximum before the age of 18 and decreases gradually afterwards.

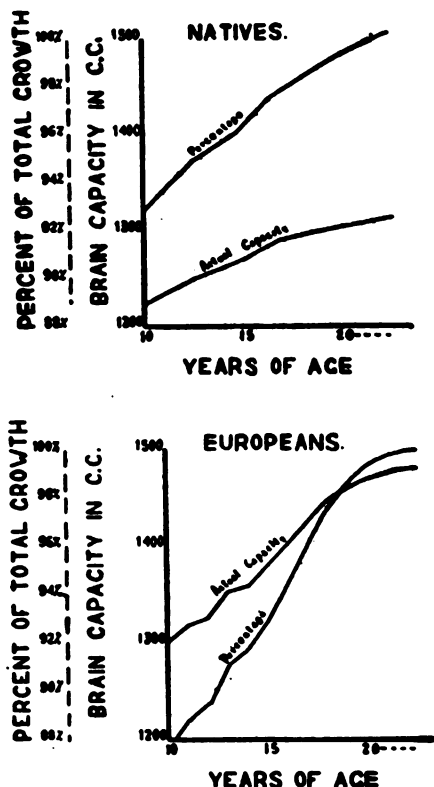
We come now to the results of submitting to statistical scrutiny the percentile tables for all the attributes examined in the series of 3,444 of all races. The scrutiny was made with the invaluable expert guidance of Mr. A. Walter, Statistician to the Conference of East African Governors.

Here I would draw attention first to comparison of the native and European curves of "actual" brain capacity as obtained by Berry for the European and by this inquiry for the East African, from the corresponding racial percentile tables.* Unfortunately the inquiry is unable to say anything as yet about natives under the age of 10. The comparison therefore begins at that age and is at once striking. The European curve of "actual" capacity begins, at the age of 10, almost where the native curve ends at the age of 20. Again, the steep ascent of the European curve

* The word "actual" is not to be taken literally.

from about the age of 14 makes a striking contrast to the flat native curve. The curves show that between ages 10 and 20 the European average yearly growth of brain is 17.7

Fig. 5. CURVES OF "ACTUAL" CAPACITY AND PERCENTAGE VOLUME INCREASE



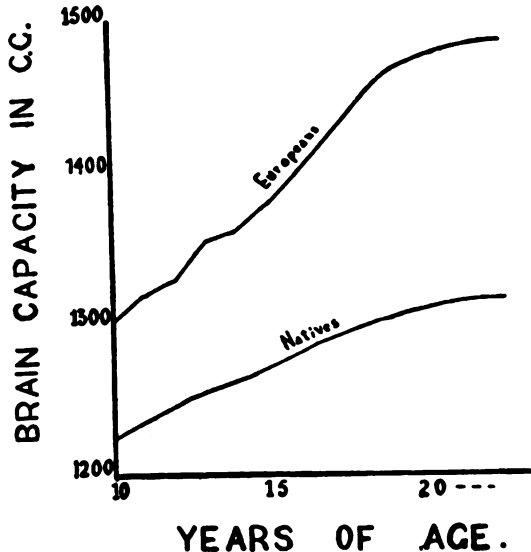
cubic centimetres; the native yearly average is only 8.5 cubic centimetres.

Turning now to the curves of percentage volume increase we see that at the age of 10 the brain of the native is already 92.8 per cent. of its total volume, while at the same age the European brain is only 87.7 per cent. of its total volume. Once more we see how different in character are these two curves.

Here we have the native and European curves of brain capacity brought together to show how the difference is largely in the steep ascent of the European curve after puberty—indicating, we think, rapid cerebral development as compared with the poor

development shown by the flat curve of the native. This touches upon a matter of

Fig. 6. RELATIONSHIP OF CURVES



importance socially. There is agreement amongst all classes of Europeans in East Africa that the native lad or *toto*, up to the age of puberty, is a bright, malleable, nice little fellow, often—as one says—quick in the uptake; but that after puberty he almost invariably falls away from promise, and disappoints our hopes by lack of development in the very period when the average European adolescent generally justifies hopes by rapid development. The same social observation is recorded, I believe of other so-called “backward” races, and this difference seems to be predicted by the difference between these curves (Figures 7 and 8), in which is shown such a marked contrast between the native and the European after puberty.

Now, bearing in our minds the different characters of these two curves of brain capacity, let us glance at the corresponding curves for all the other attributes examined by Berry's method. You will agree that the family likeness in each curve is remarkable; and also you will observe a new feature. As before, the native curve is flat throughout, and the European curve runs steeply up after

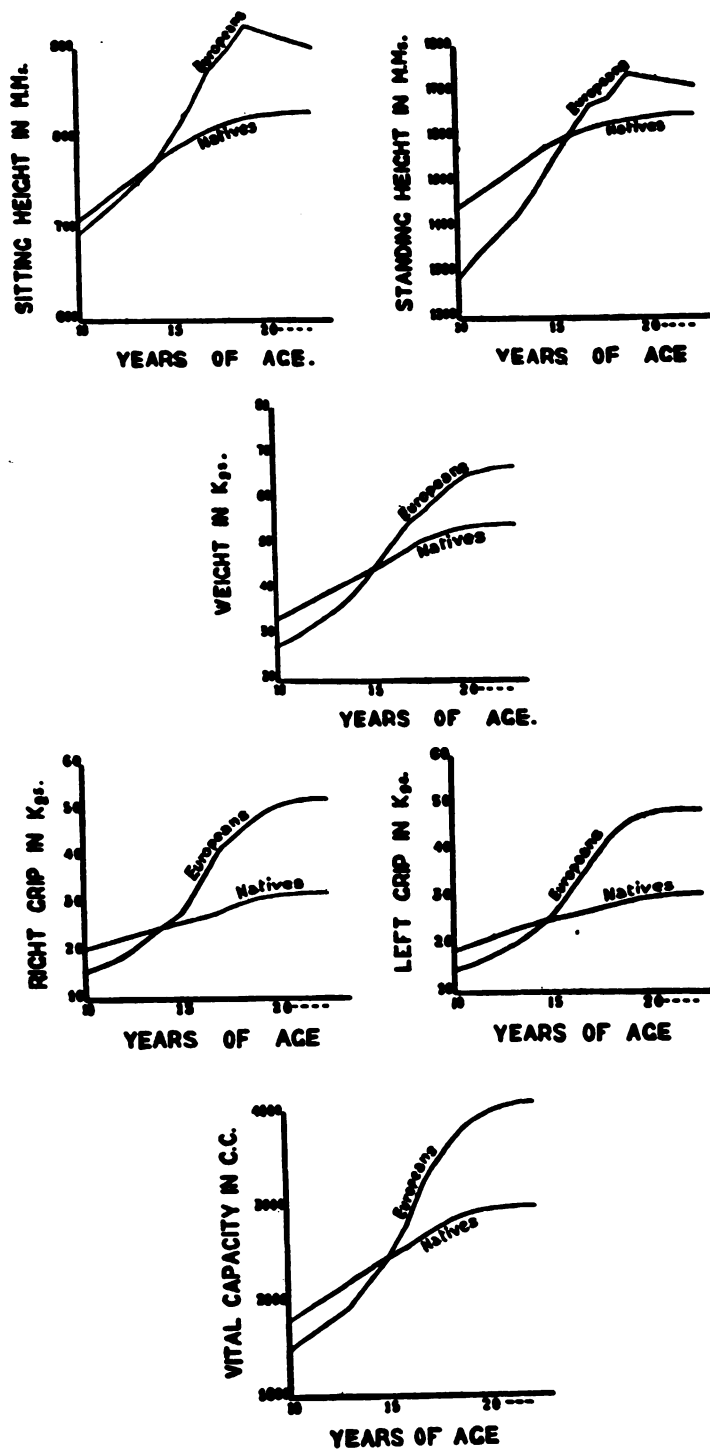
puberty; but in all these attributes the curves so contrasted show that the native *toto* actually excels the European boy consistently up to puberty. This juvenile native superiority is, to my mind, an encouraging fact for the future. I am open to correction by authority, but these facts as they stand seem to suggest that by ascertaining why the native does not develop after puberty as the European develops—if science can ascertain that: and why not?—we shall be a definite step nearer to discovering the causes of racial “backwardness.”

Our next consideration is of such applications of our provisional East African standards as time and circumstances allowed, and refers to four series of adult males examined by Berry's method and the new standards. The series made up as follows: (1) 51 “educated” natives; (2) 46 who were mentally disordered; (3) 46 who were mentally deficient; and (4) 22 criminals. The numbers in these series are small, nevertheless, as the curves prepared from them show, the results offer interesting features. Taking again as example the curves of brain capacity, the chief point of interest must be in their relation to the average curve for the normal native. Considering the matter beforehand it seemed that if Berry's method was as valuable an indication of cerebral development as it appeared to be there was only one relative arrangement of the curves of the four special series possible. Taking the curve for the 1,290 adults as representing the average normal, the curve for the “educated” series should run clear above it; the curve for the mentally disordered should run close to it and probably in and out of it; that for the criminals should hover below it; and that for the aments should be definitely and constantly below this average normal curve. Moreover, the curve for the European average normal should run well above all these native curves.

The statistical plotting of these curves was awaited with some anxiety.

This chart shows how the anticipated placings occurred. I should add that the same placings—with, of course, individual variations—are seen in the charts for all the other

Figs. 7 and 8. RELATIONSHIP OF CURVES

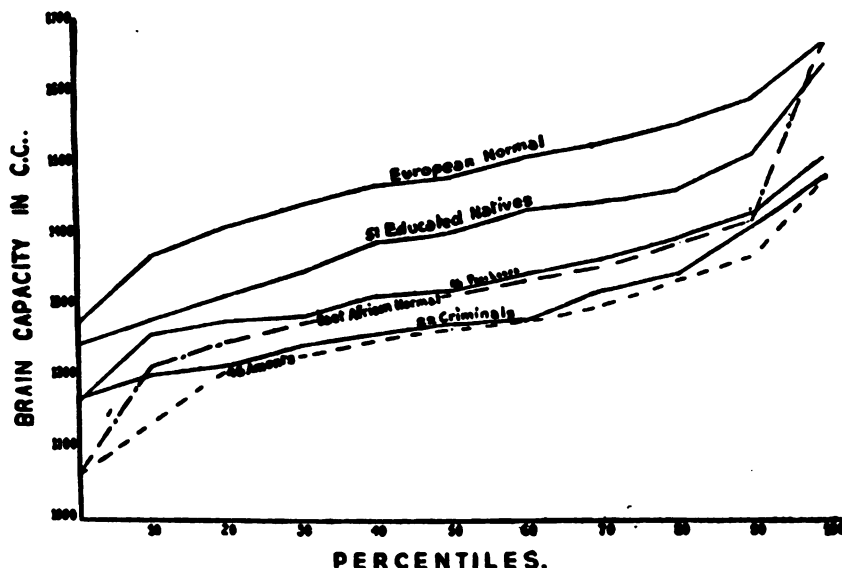


attributes. I venture to affirm that my statistical guide, Mr. Walter, and I had quite a good day ; although Professor Berry might say we backed a certainty.

How may the constant relative positions

of the pick of Kenya natives. They had been selected for education and special employment by a careful filtering process through Mission Schools, District Commissioners, and employers. This points to inherent cerebral

Fig. 9. COMPARATIVE CURVES



of these curves be explained? I suggest that our knowledge of the human brain allows us to believe that the constant inferiority of the ament curve is based upon inherent cerebral deficiency. It is consistent with knowledge and with this explanation that the curves for the mentally disordered and for the criminals are as we found them, and that the curve for the "educated" series is constantly superior to the native average. The question arises—why in the charts for all the attributes is the curve for the "educated" East African constantly and markedly inferior to the average European curve?

A plausible answer is that even the best of the natives are on a lower biological level than the average European. There may be much to support that view, but the answer may be too glib, because it does not allow for the importance of environmental influences. There are some environmental facts about this "educated" series which may help us. Firstly, the individuals of the series were out

superiority standing the test of superior environment as the average native might not. Secondly, this table (Fig. 10) seems to be instructive.

We see that the racial distribution of the aments corresponds to that of the 1,290 adults from whom the average native curve was obtained, i.e. the majority of them were Bantu ; over 80 per cent. The distribution in the "educated" series is very different ; 57 per cent. were from tribes commonly credited with inborn superiority to the Eastern Bantu and of these 48 per cent. were very superior Sudanese foreigners.

At this stage, then, we may fairly say that the constant relative positions of the curves suggest inherent differences of cerebral development, but that more knowledge is required. We shall see presently what Dr. Vint's research has to say on this vital question. Meanwhile let us avoid the error of thinking that the "educated" series proved superior in all attributes, including the size

Fig. 10. 51 EDUCATED and 46 AMENTS

(51 EDUCATED) MALE ADULTS OF ALL RACES			46 AMENTS (MALE ADULTS OF ALL RACES)		
Race	Number	Mean Brain capacity in c.c.	Race	Number	Mean Brain capacity in c.c.
Bantu			Bantu		
Kikuyu	11	1,402	Kikuyu	8	1,258
Others	11	1,423	Others	30	1,273
	22	1,417		38	1,270
Nilote			Nilote		
Jaluo	13	1,371	Jaluo	3	1,288
Sudanese	14	1,419			
	27	1,398			
‡ Hamite			‡ Hamite		
Masai	1	1,426	Nandi	1	1,228
					1,275
Hamite	—	—	Hamite		
			Somali	1	1,296
Mixed					
	1	1,567	Mixed	3	1,328

Mean Brain capacity for Male Adults
of all Races in unselected series 1,316.

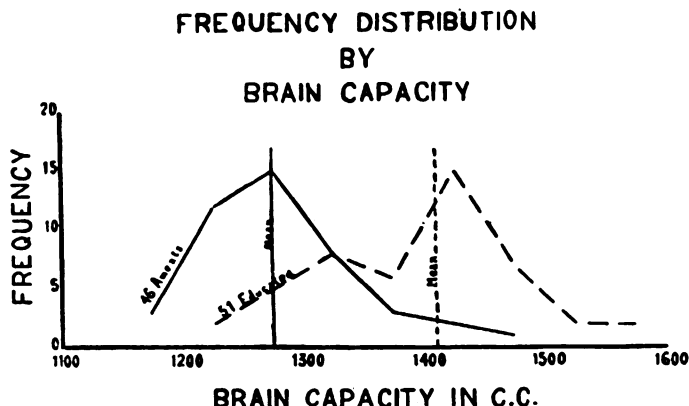
of their brains and height of their bodies, just because they had been through some European scholastic education. Environmental influences are of vast importance; but we must not imperil the future of the native by a too easy solution of the difficulties his condition presents us with. We should all rejoice if we could raise the native mentally and physically, as we all wish to raise him, simply by liberal doses of Kings and Queens of England and quadratic equations. If the problem is more complicated our task is more inspiring.

A further statistical effort was the ascer-

tainment of frequency distributions. Fig. 11 shows the marked abscissa shift from 1,275 cubic centimetres for the aments to 1,425 cubic centimetres for the "educated"—a difference of 150 cubic centimetres in brain capacity. The value of 1,275 cubic centimetres was possessed by 32.5 per cent. of the aments, the value of 1,425 cubic centimetres by 29.4 per cent. of the "educated."

Here we have a statistical concentration of the facts about these two series. Examined with the percentile tables for East Africans the means here for all attributes support the principles laid down by the distinguished

Fig. 11. FREQUENCY DISTRIBUTION



founder of the Stoke Park School in Mental Deficiency.* Briefly, the means of the "educated" series in all attributes fall well above the average normal mean; one in the 60 per-centiles for normal adults, two in the 70 per-

Fig. 12. STANDARD DEVIATIONS

51 EDUCATED	True Mean	P.E.	Standard Deviation	P.E.
Brain capacity	1,410 c.cm.	± 8.66	91.70	± 6.12
Standing height	1,704 mm.	± 6.74	71.40	± 4.77
Sitting height	844 mm.	± 3.41	36.10	± 2.41
Weight	59.5 kgm.	± 0.64	6.75	± 0.45
Right grip	37.9 kgm.	± 0.57	6.05	± 0.40
Left grip	35.1 kgm.	± 0.57	6.02	± 0.40
Vital capacity	3,354 c.cm.	± 51.30	342.80	± 36.20
46 AMENTS				
Brain capacity	1,275 c.cm.	± 7.78	75.20	± 5.50
Standing height	1,619 mm.	± 9.04	87.40	± 6.40
Sitting height	802 mm.	± 4.00	38.70	± 2.83
Weight	49.3 kgm.	± 0.83	8.10	± 0.59
Right grip	26.7 kgm.	± 0.59	5.70	± 0.42
Left grip	24.3 kgm.	± 0.72	7.00	± 0.51
Vital capacity	2,392 c.cm.	± 63.70	615.00	± 45.09

centiles, and four in the 80 percentiles. The means for the aments tell another story. Two fall in the 30 percentiles, therefore in the lowest grade of the normal range, two in the 10 percentiles, and three below the 10 percentiles: i.e. five out of seven fall well within the regions of abnormality, judged by the provisional standards for the East African obtained by this inquiry.

The last statistical point to which I would draw attention is something of a sideline, but seems to be of interest. Throughout the inquiry the obvious difference of head size between native and European appeared due to inferiority of the native head in height rather than to inferiority in length and breadth. In lateral view the native head (unlike the European's) showed a flattened rather than a convex outline, and a smaller and receding forehead. These features are seen also in a number of unselected skulls I brought from Kenya to Sir Arthur Keith; and again in the brain itself, which has a flattened superior outline and a deficient frontal region.

Now, the auricular measurement of head height used in this inquiry is regarded by

anthropologists as a measurement of the height of the cerebrum.* The facts I have given suggested that height of head so measured might be by itself some clue to cerebral development, always excluding the factor of disease: i.e. height of head might be a less untrustworthy guide than size of head to what is inside. The matter seemed worth inquiring into by means of correlations and ratios. These proved significant, and the significance was increased by these curves for each measurement of the 1,290 average normal natives, the 51 "educated," and the 46 aments (Fig. 13).

In breadth the three curves run closely together; in length there is a little separation; but in height there is really significant separation of the ament curve from the others. It should be added that Dr. Vint—without, as I have said, any knowledge of what I was doing in the matter—came to a similar conclusion from his observations on the brain, but, of course, for other reasons. In his forthcoming paper he says: "The reduction in size of the native brain seems to be accounted for mainly by a failure in development of height." I do not regard our observations as the last word on this point, but if they are confirmed a scientific halo may yet adorn the so-called "highbrow."

THE BRAIN

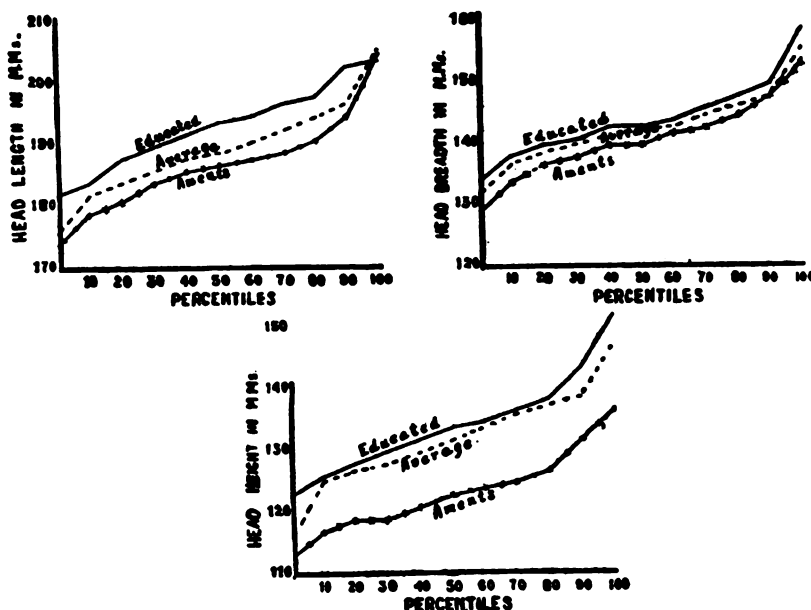
Dr. Vint's report on his naked-eye and microscopic examination of one hundred brains of normal male adults is to be published shortly in the *Journal of Anatomy*; but in order that we may have a little more light on the question of whether the East African cerebrum is, on the average, on a lower biological level than the European cerebrum, I may mention these facts:

In the areas of the cortex examined, Dr. Vint found a total inferiority in quantity, as compared with the European, of 14.8 per cent. His naked-eye examination revealed a significant simplicity of convolitional pattern and many features generally called primitive; e.g. the lunate sulcus, described by Professor Elliot Smith, was present in

* *Mental Deficiency, Stoke Park Studies. First Series.* 1933.

* E. P. Stibbe: *Introduction to Physical Anthropology.* 1930.

Fig. 13. CURVES OF HEAD MEASUREMENTS



seventy of the one hundred brains. The microscopic examination showed the important supragranular layer of the cortex to be deficient in all the six areas that Von Economo examined, and the cells of these areas to be deficient very markedly in size, arrangement and in differentiation.

These, I think, are enough of Dr. Vint's new facts to make us feel that the deficiencies found in examination of the living are indeed associated with suggestive deficiency in the native cerebrum; that we are in fact confronted in the East African with a brain on a lower biological level. This, I submit, is a matter requiring investigation by the highest expert skill into the question of heredity or environment or both.

I would again stress the importance of examining possible physical and environmental influences. There is, for example, the well-known hypothesis of Sir Arthur Keith connecting incretion with racial differentiation. There is the influence of malaria; and of calcium and other deficiencies in diet. There is the possible influence throughout the ages of the high incidence of syphilis and yaws in Kenya. East Africa offers a welter of

material for investigation before civilization increases the difficulties.

"STIGMATA"

Amongst our tribes the so-called stigmata of amentia abound, and I am not satisfied that they are confined to the ament types. In particular, those associated in Europe with the type called Mongolian by that great contributor to knowledge of amentia, Dr. Langdon-Down—such anomalies as the short incurved little finger and the wide space between the first and second toes—are so common that I regard them at present as racial characteristics. I will not detain you with this subject, much in need of precise observation; but I may mention that I have found gynecomastia (female breasts in the male) to be common, and also a marked general feminoid tendency in the males of our tribes. A curious condition which I found first amongst aments and then in apparently normal men is what appears to be a bilateral hyperplasia of the parotids giving a permanent appearance of mumps. So far I have found this condition only amongst the Jalu tribe.

"INTELLIGENCE" TESTS

Intelligence, I understand, is a quality of man requiring a multitude of definitions out of every nation; the number having been increased since I left England nine years ago. In these circumstances I need hardly ask pardon for my ignorance, or for preferring to call "intelligence tests," with Professor Berry, tests of "mental reaction," and to think of them, with Professor Hogben, as "objective descriptions of how human beings react to certain situations."*

Efforts over some years to devise tests suitable to the East African, "raw" and "educated" led me to the conclusion that the task awaits the expert. I found the Binet type of test, as you may imagine, quite unsuitable. The Porteous maze test I found both suitable and to native liking.† Except in experiment I applied it to only forty of the "educated" series of male adults; they answered with a mean age-score of 10.5 years. My experiments ended with half-hearted choice of three performance tests from Pinter and Paterson's Scale. I applied these as you see here (Fig. 14). Here, again,

Fig. 14. PERFORMANCES OF MALE ADULTS

		Five Figure Board		Triangle		Cubes
		Time in secs.	Errors	Time in secs.	Errors	Score
70						
Unselected	Ave.	162	10	130	14	3
41						
Educated	"	118	7	86	6	5
27						
Aments	"	D.N.C.	D.N.C.	D.N.C.	D.N.C.	2
European						
normal age						
14 (P. & P.)	"	59	3	39	6	8

D.N.C. = Did not complete.

the numbers are too small for definite conclusions, but the relative results are such as were to be expected from the curves already

* L. Hogben: *Genetic Principles in Medicine and Social Science*. 1931.

† S. D. Porteous: *The Psychology of a Primitive People*. 1931.

seen. The European figures are also in the expected places, but are added here with a caution. I find, on coming out of the darkness and confusion of Africa into the clear and tranquil air of European psychological thought and practice, that mental tests and mental ages by themselves are largely depended upon for the diagnosis of amentia. I venture to say only this: In my experience of many thousands of natives, intelligence in its ordinary connotation is present amongst them often to an enviable degree; nevertheless, I believe we may do the native injustice and even injury if we are content to estimate his "intelligence" only in terms of his apparent ability to cope with the exactions of European scholastic education. Moreover, in the present state of psychological knowledge it seems to me that any use of mental tests as a means of comparison between European and African—races of widely different physical and social heritage and environment—carries the risk of misleading African education and legislative policy. The field for research by the trained psychologist of broad outlook is enormous in East Africa; his presence would be welcome.

THE SOCIAL CRITERION

I should like to consider for a moment the question of the social criterion of amentia. Viewed from the equator through past experience and modern text-books, European thought—if I may say so—appears to be over-influenced by the old dictum of Professor Karl Pearson that social inefficiency is the big problem. No doubt it is, but social inefficiency is only a symptom; the social criterion may be a tardy contribution to prevention of anti-social behaviour. In Kenya the goal for science and society stands out—determination of the causes of amentia and of how to prevent it. The problem of racial "backwardness" awaits investigation. The relative contributions to "backwardness" of nature and nurture must be ascertained as far as science can ascertain them, if we are to do our best for the native. A primary part of the problem of "backwardness" is the problem of endogenous amentia.

In Kenya we have three main races:

Europeans (20,000), Asiatics (50,000), Africans (3,000,000), with three main standards of social behaviour and efficiency. The relativity of the social criterion is therefore another of our perplexities. A native socially efficient in his own simple environment may—without change in him—prove inefficient and even dangerous in the complex environment of a higher social organisation. Judged thus he may be considered normal at home, abnormal abroad.

Dr. Tredgold's term,* "social adaptiveness," and Adler's words, "the capacity for developing a social feeling is absent only in the feeble-minded"†—these words suggest biological variations, but the social criterion everywhere seems to pay little attention to biology. The gropings of this inquiry led me to this far-reaching question: *Shall the members of an "uncivilized" race be judged by the standards of the civilization into which they are invited, or by standards of their own race found for it by the civilization?* The question is not to be left unanswered where "civilized" and "uncivilized" must live side by side in close association. The question seems a challenge to our ignorance of the genetic basis of racial differences and of social behaviour.

A SPECULATION

Finally, the inquiry has impressed me with the existence of a large class of natives, not feeble-minded as Europe conceives the condition, to whom the term "naturals" might be applied provisionally in a sense less disparaging than the old sense. Allow me a light speculation. Amongst our tribes the idiot and the lowest types of imbecile are rarely seen. The reason appears to be that the social criterion of family or clan supported by witchcraft, decided against the survival of these well-marked types because their manifest disabilities would make them a burden to the commune. The "right to live" is not a content of native ethics.‡ Infanticide is widely recorded in Africa; even twins are

said to be regarded by some tribes as abnormalities to be put away at once.

The case with the high-grade ament (or feeble-minded) is different. His state is not manifest to the tribe. He escapes scrutiny and lives a life of little social strain, wholly devoid, be it remembered, of economic pressure and competition. He has not to earn a living and the right to marry, as we insist on doing. The commune sees to all that. The picture of him and his women goes into a quatrain:

"Here with a bowl of maize beneath the bough

A gourd of beer and thou and thou and thou

Working to keep me in the rich Reserve,
And rich Reserve's environment enow."

That the picture is changing in many districts is not our present interest. What of the past? I fear mathematical symbolism does not help us there, but a little courage stimulates imagination. No doubt lethal diseases eliminated indiscriminately; not so the constant tribal warfare; not so the constant conflict with lion, leopard and buffalo; those took the best, the brainy, in those days the leaders—not unimportant if it is true that a race advances less because of its average than because of its exceptional men. Then there was never elimination of the weak-minded through economic stress and competitive strain. Crude as it may seem it is not an unreasonable hypothesis to the mere clinician, little versed in questions of heredity, that the general tendency was towards propagation of a type from which the feeble-minded and natural of to-day are common derivatives.

CONCLUSION

Dr. Vint and I have only cleared a little bush, picked up a few samples, and brought them for the opinion of authority. Through the bush we thought we spied a possible path to the greatest of all objects in Africa—to a determination of the major causes of the present low biological level of the native commonly called "backwardness," and to a discovery of remedies for those causes. We

* A. F. Tredgold: *Mental Deficiency*. 1929.

† A. Adler: *Character and Personality*. Vol. I, No. 4, June 1933.

‡ L. T. Hobhouse: *Morals in Evolution*. 1915.

submit that the only conclusion from our venture is that wide collaborative team-research by many sciences is a pressing necessity.

Cerebral deficiency affecting a population under British tutelage and not restricted to the types known in Europe as amentia—such deficiency has medical, legal, educational, and social aspects of Imperial importance.

A conception of scientific colonization is

not now beyond the range of practical politics. With great respect I urge that scientific assistance to colonial statesmanship might well become incorporated amongst the noble national ideals which distinguish British trusteeship for weaker peoples.*

* Towards the expenses of the inquiry on the living a grant was received from the British Medical Association and is gratefully acknowledged.



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